

Tracking: Winter Conference Development/Validation

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Tracking Meeting

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Tracking Development: Progress

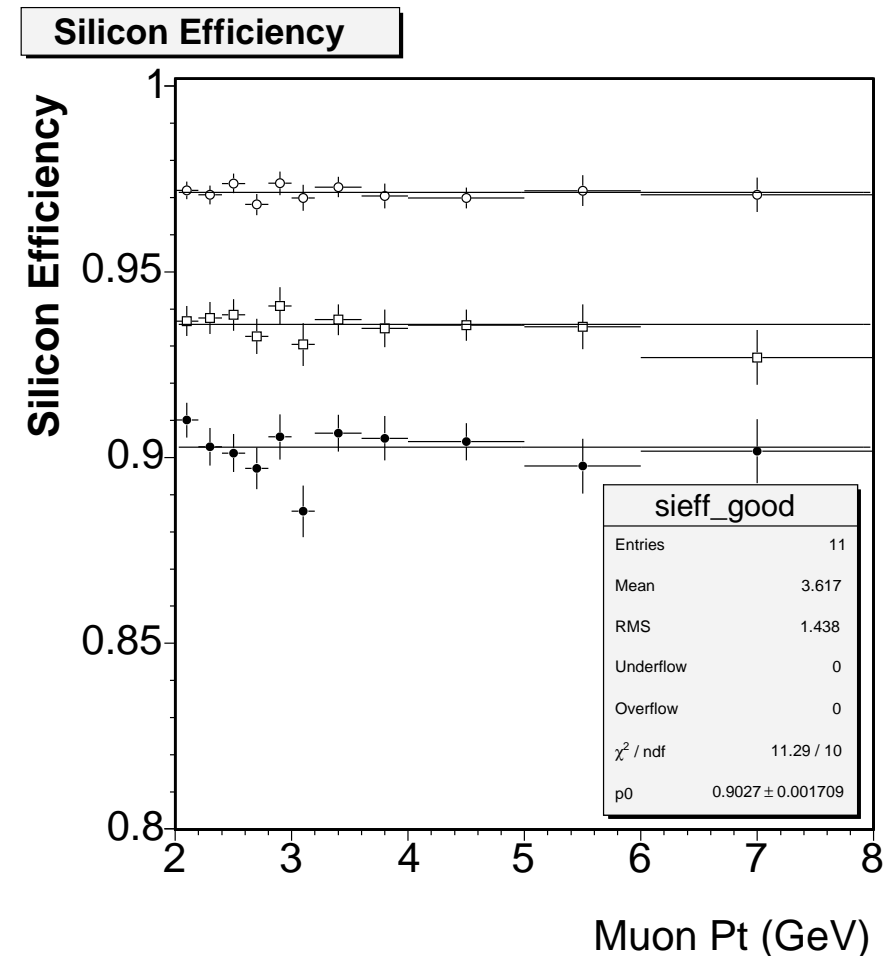
Projects for 5.1.0

- New COT alignment: done
- Corresponding silicon alignment: final version ready
- Improved COT drift model: code in place: need to determine constants/run calibration job
- t_0 used in COT tracking: t_0 in Z vertex collection and code exists for fitting: reading of output data works
- IO tracking: inside-out: working version ready: Clean up of COT/IO-Standalone duplicates done
- Standalone tracking improvements wafer level corrections: done
- Standalone tracking expected ladder information: First version in: calib accessors in testing
- Beamline code run in or before production: ready
- Beamline pointing for HL code: done
- Improvements to dE/dx code: done
- Phoenix tracking: complete version ready: need to combine with IO tracking - probably not for 5.1.0
- L3 Silicon Standalone Tracking: ready: need to quantify performance
- Use of L00: Refit that uses L00 done: Alignment work needed - radial corrections
- Improvements to pull distributions of track parameters: needs more manpower
Theory proposed by Andy Foland - probably caused by hits in tails of the resolution distribution

Silicon Tracking Performance: J/ψ

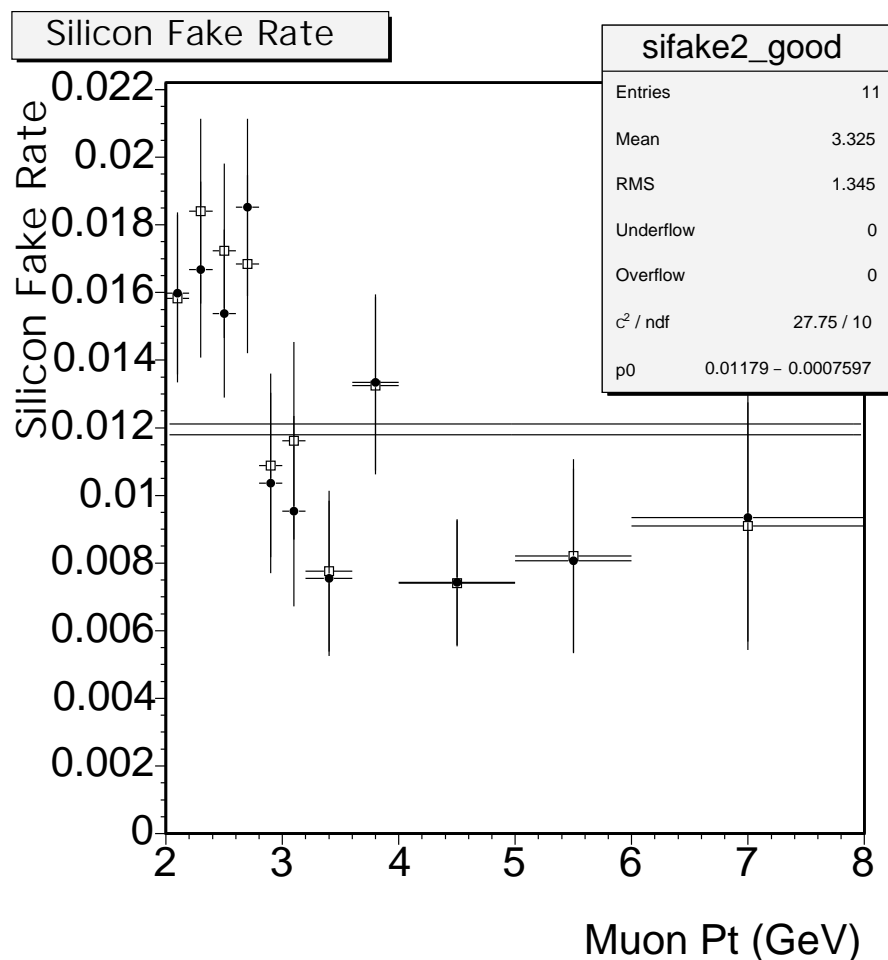
Efficiency as a function of p_T

- Use $J/\psi \rightarrow \mu\mu$ events
- Denominator
 - Good tracks - Muons identified in COT and muon Chambers
 - Fiducial in silicon - intersects at least 3 layers of SVXII - vertexing part of silicon detector
- Numerator: Find hits in at least N-1 of the intersected layers
 - Active/working layers
- Numerator2: Find hits in at least 3 of the intersected layers
 - Includes hits in 3 layers out of 5 active layers
 - Does not drive up fake rate as much as before

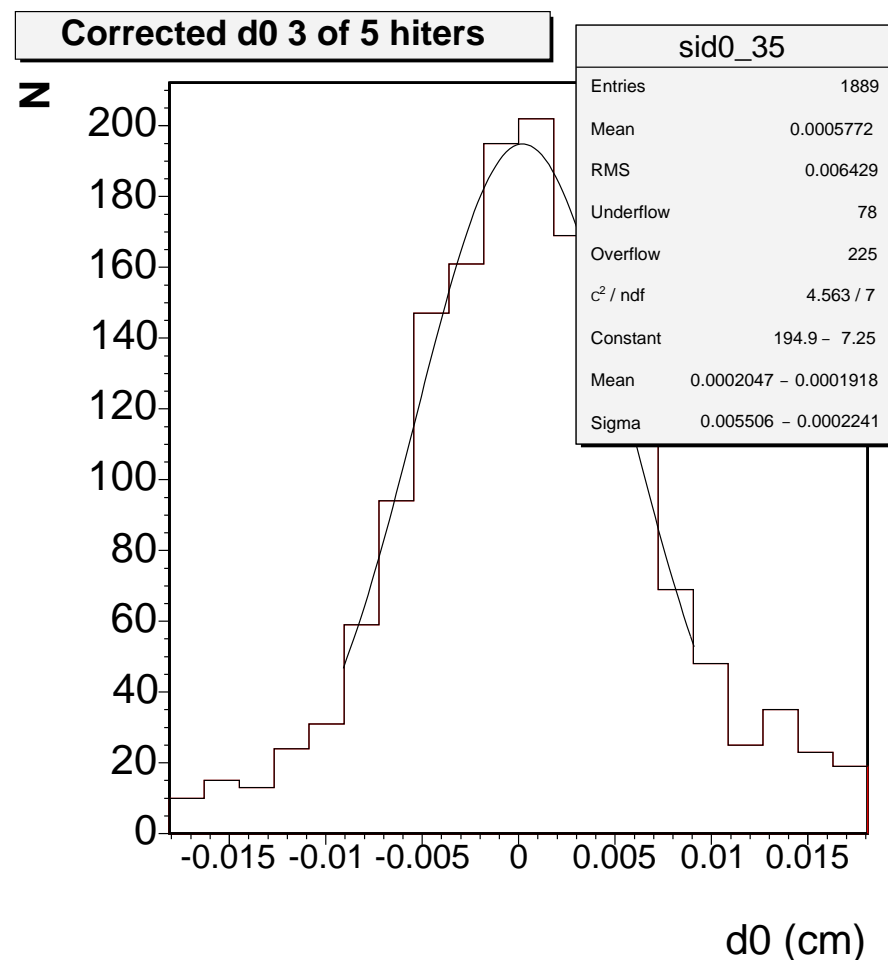


Average efficiency 90.3% or 93.6%
of 97.1% possible

Silicon Tracking Performance: J/ψ



Average fake rate 1.17% or 1.21%



D0 resolution $55\mu\text{m}$ compared to $48\mu\text{m}$

Silicon Tracking Performance: MultiJet Events

Efficiency as a function of p_T

- Use MultiJet events from gjet09
- Denominator
 - Good COT tracks in jet cone size 0.4
 - Sign d0 according to jet direction
 - Track in active area - 3 layers on
- Numerator: Find hits in 3 layers
- Numerator2: Fake rate subtracted using twice 3σ negative tail
- Numbers: 4.8.4 \rightarrow 5.1.0
 - Efficiency down 1.8%: 91.9% \rightarrow 90.1%
 - Dropped 3% for low momentum
 - Up 10% for high momentum: over 10GeV 73.3% \rightarrow 83.0%
 - Fake rate down 1.2%: 6.4% \rightarrow 5.2%

